## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims

Claim 1 (currently amended): A process for producing a polymeric actuator comprising an ion-exchange resin product and metal electrodes which are formed on the surface of the ion-exchange resin product and are insulated from each other, said actuator operating as an actuator by applying a potential difference between the metal electrodes when the ion-exchange resin product is in the water-containing state to allow the ion-exchange resin product to undergo bending or deformation,

wherein the following steps (i) to (iii) are repeatedly conducted to form the metal electrodes ranging from the surface of the ion-exchange resin product to the inside thereof;

(i) a step of allowing the ion-exchange resin product to adsorb a metal complex in an aqueous solution (adsorption step),

(ii) a step of reducing the metal complex adsorbed on the ion-exchange resin product by a reducing agent to deposit a metal on the surface of the ion-exchange resin product (deposition step), and

(iii) a step of washing the ion-exchange resin product having the deposited metal (washing step),

such that the deposition of the metal is conducted on the surface of the ion-exchange resin product and further in the resin product;

and the reduction of the medal complex forming the electrodes is carried out by immersing the ion-exchange resin product adsorbing the metal complex thereon in an aqueous solution containing a reducing agent.

Claims 2-7 (canceled).

Claim 8 (previously presented): A process as in claim 1, wherein the adsorption, deposition, and washing steps are repeatedly conducted for at least 4 cycles.

Claim 9 (previously presented): A process as in claim 8, wherein the adsorption, deposition, and washing steps are repeatedly conducted for a number of cycles in the range of from 4-9.

Claim 10 (previously presented): A process as in claim 1, wherein in the case of an ion-exchange resin product being a plate or a film, the ratio of the thickness (a1) of the metal electrode formed on the ion-exchange resin product to the thickness (b1) of the ion-exchange resin product including the metal electrode (a1/b1) is in the range of 0.03 to 0.40.

Claim 11 (previously presented) A process as in claim 1, wherein in the case of the ion-exchange resin product being a cylinder with the metal electrode formed on an outer or inner surface thereof, the ratio of the thickness (a2) of the metal electrode formed on the ion-exchange resin product to the thickness (b2) of the cylindrical ion-exchange resin product including the metal electrode (a2/b2) is in the range of 0.02 to 0.70.

Claim 12 (previously presented): A process as in claim 1, wherein in the case of the ion-exchange resin product being a cylinder with the metal electrode formed on both an inner and outer surface thereof, the ratio of the thickness (C) of the cylindrical ion-exchange resin product excluding the metal electrode to the thickness (b4) of the cylindrical ion-exchange resin product including the metal electrode (C/b4) is in the range of 0.20 to 0.95.

Claim 13 (new): A process for producing a polymeric actuator according to claim 1, wherein a treatment is carried out prior to the formation of the metal electrode and said treatment is carried out by immersing an ion-exchange resin product in an alcohol such as methanol or ethanol.

Claim 14 (new): A process for producing a polymeric actuator according to claim 1, wherein an ion-exchange resin product has an ion-exchange capacity of 0.8 to 3.0 meq/g.

Claim 15 (new): A process for producing a polymeric actuator according to claim 1, wherein said metal complex is a gold complex.

Claim 16 (new): A process for producing a polymeric actuator according to claim 1, wherein the adsorption, deposition, and washing steps are repeatedly conducted for a number of cycles up to 20.

Claim 17 (new): A process for producing a polymeric actuator according to claim 1, wherein the number of cycles of steps is in the range of 4 to 9; surface resistance is not greater than 2 Ω, when the length of an ion-exchange resin product of the obtained metal electrode is 20 mm and the width of an ion-exchange resin product of the obtained metal electrode is 1 mm.

Claim 18 (new): A process for producing a polymeric actuator according to claim 1, wherein surface resistance is in the range of 2 - 0.5 Ω when the length of an ion-exchange resin product is 20 mm and the width of an ion-exchange resin product is 1 mm.

Claim 19 (new): A process for producing a polymeric actuator according to claim 1, wherein a washing liquid in the washing step is selected from the group consisting of sodium hydroxide aqueous solution, the concentration of which is in the range of 0.0l to 5.0 mol/liter; sulfuric acid aqueous solution, the concentration of which is in the range of 0.0l to

6 mol/liter; or hydrochloric acid aqueous solution, the concentration of which is in the range of 0.01 to 6 mol/liter.

Claim 20 (new): A process for producing a polymeric actuator comprising an ion-exchanging resin product and metal electrodes which are formed on the surface of the ion-exchange resin product and are insulated from each other, said actuator operating as an actuator by applying a potential difference between the metal electrodes when the ion-exchange resin product is in the water-containing state to allow the ion-exchange resin product to undergo bending or deformation, wherein the following steps ( i ) to ( iii ) are repeatedly conducted to form the metal electrodes ranging from the surface of the ion-exchanging resin product to the inside thereof;

(i) a step of following the ion-exchanging resin product to adsorb a metal complex in an aqueous solution (adsorption step),

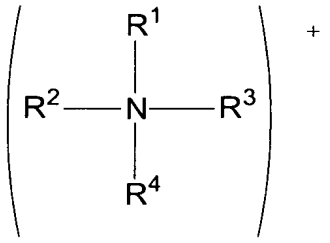
(ii) a step of reducing the metal complex adsorbed on the ion-exchange resin product by a reducing agent to deposit a metal on the surface of the ion-exchange resin product (deposition step), and

(iii) a step of washing the ion-exchange resin product having the deposited metal (washing step),

such that the deposition of the metal is conducted on the surface of the ion-exchange resin product and further in the resin product; and the ion-exchange resin product having metal electrodes is immersed in an aqueous solution containing alkylammonium ions to exchange the counter ions with the alkylammonium ions.

Claim 21 (new): A process for producing a polymeric actuator according to claim 20, wherein said aqueous solution contains alkylammonium salt in the range of 0.01 to 10 mol/liter.

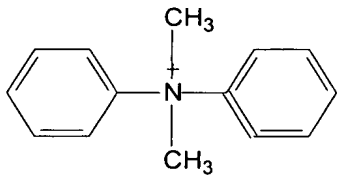
Claim 22 (new): A process for producing a polymeric actuator according to claim 20, wherein the alkylammonium ions are alkylammonium ions containing at least ions represented by the following formula (1):



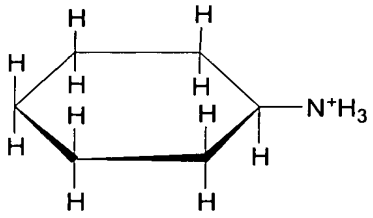
(1)

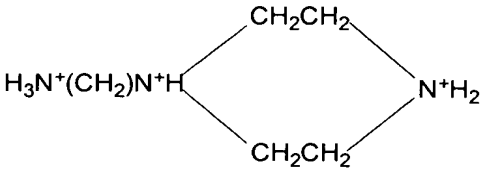
wherein R1 to R4 may be the same or different and are each a hydrogen atom, a hydrocarbon group, an oxygen-containing hydrocarbon group or a nitrogen-containing hydrocarbon group, at least one of R1 to R4 is a group other than a hydrogen atom, and two or more of R1 to R4 may be bonded to form a ring.

Claim 23 (new): A process for producing a polymeric actuator according to claim 20, wherein the ion represented by the formula (1) is $CH_3N^+H_3$, $C_2H_5N^+H_3$, $(CH_3)_2N^+H_2$, $(C_2H_5)_2N^+H_2$, $(C_4H_9)_2N^+H_2$, $(C_5H_{11})_2N^+H_2$, $(CH_3)_3N^+H$, $(C_2H_5)_3N^+H$, $(C_4H_9)_3N^+H$, $(C_5H_{11})_3N^+H$, $(CH_3)_4N^+$, $(C_2H_5)_4N^+$, $(C_3H_7)_4N^+$, $(C_4H_9)_4N^+$, $H_3N^+(CH_2)_4N^+H_3$, $H_2C{=}CHCH_2N^+HCH_3$, $H_3N^+(CH_2)_4N^+H_2(CH_2)_4N^+H_3$, $HC{\equiv}CCH_2N^+H_2$, $CH_3CH(OH)CH_2N^+H_3$, $H_3N^+(CH_2)_5OH$, $H_3N^+CH(CH_2OH)_2$, $(HOCH_2)_2C(CH_2N^+H_3)_2$, $C_2H_5OCH_2CH_2N^+H_3$,

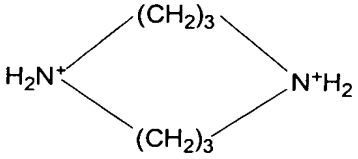

CH3
N
CH3

,

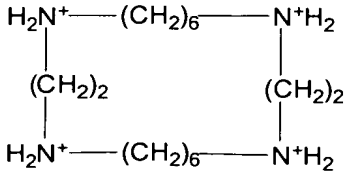

H
H
H
H
H
H
H
H
H
H
H
N+H3


CH2CH2
H3N+(CH2)N+H
N+H2
CH2CH2

,


(CH2)3
H2N+
N+H2
(CH2)3

or


H2N+
(CH2)6
N+H2
(CH2)2
(CH2)2
H2N+
(CH2)6
N+H2

.